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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,405	07/28/2003	Brian K. Tanner	PANA-01066US3 SRM/TAW	7231
23910	7590	02/10/2005	EXAMINER MILLER, PATRICK L	
FLIESLER MEYER, LLP FOUR EMBARCADERO CENTER SUITE 400 SAN FRANCISCO, CA 94111			ART UNIT 2837	PAPER NUMBER

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/629,405

Applicant(s)

TANNER, BRIAN K.

Examiner

Patrick Miller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4 and 7-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-12 is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 13 is/are rejected.
- 7) ☒ Claim(s) 14-17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's arguments filed on November 15, 2004 have been fully considered but they are not persuasive.

- With respect to Claims 1 and 13, Schirle (6,055,120) does disclose determining spin-up parameters of the spindle motor based on a temperature of the voice coil motor (VCM), where the spin-up parameters include the spin-up voltage. Specifically, the detected temperature “sets” a time-out period; the processor determines the spin-up parameter, speed, based on the set time-out period, and the speed parameter is determined by the voltage across the motor (voltage parameter) during spin-up to “normal” speed (Fig. 2, #28; Fig. 3, #71; col. 4, ll. 35-65).
- Additionally, based on a further examination of the Schirle and Wallis references, the Examiner has withdrawn the indication of allowability for Claims 13-17.

Claim Objections

2. Claim 17 is objected to because of the following informalities: see bullet(s) below.

Appropriate correction is required.

- Claim 17 recites, “the sequence of commutation states” (l. 3). Lack of antecedent basis for this term.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schirle (6,055,120).

- With respect to Claim 1, Schirle discloses a method to determine spin-up parameters of the spindle motor based on a temperature of the VCM (Fig. 2, #28; Fig. 3, #71; col. 4, ll. 35-65; detected temperature “sets” a time-out period; the processor determines the spin-up parameter, speed, based on the set time-out period, and the speed parameter is determined by the voltage across the motor (voltage parameter) during spin-up to “normal” speed), wherein the spin-up parameter is spin-up voltage (cols. 4/5, ll. 66-67/1-13; voltage parameter indicative of spindle speed). Additionally, the temperature sensor of Schirle (Fig. 2, #50) detects the ambient temperature inside the disk drive module (col. 4, lines 35-46). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that, since the voice coil motor emits heat, the ambient temperature sensed by the temperature sensor is comprised, in part, from the temperature of the VCM.
- With respect to Claim 4, Schirle discloses the step of setting a time out period after which the spindle motor is turned off if it has not reached a desired operational velocity (col.

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4/5, lines 66-67/1-13), wherein the time out period is increased with a decrease in the temperature (col. 4, lines 31-34; increased time-out period when the temperature is low).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schirle (6,055,120) as applied to claim 1 above, and further in view of Wallis (5,268,804).

- With respect to claim 3, Schirle does not disclose a step for determining the temperature comprises measuring the resistance of the coil.
 - With respect to claim 3, Wallis discloses determining the temperature of a VCM based on the resistance of a coil of the VCM (col. 4, lines 47-63; Fig. 1, 'VCM Temperature' is sent to #4, which is in a processor. Wallis measures the temperature of the VCM as described to increase the time taken to move the data head between given positions if the temperature of the VCM is above a predetermined value (abstract). This provides the advantage of reducing the heat built up in the mechanism moving the data without reducing the data access time (cols. ½, lines 63-68/1-5).
 - Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that a measurement circuit used to measure the resistance of a coil of the VCM to determine the temperature of the VCM could replace the temperature sensor of Schirle, thereby increasing the time taken to move the data head (of Schirle) between given positions, and providing the advantage of reducing the built-up heat in the mechanism moving the data without reducing the data access time, as taught by Wallis.
5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schirle (6,055,120) in view of Wallis (5,268,804).

- Schirle discloses a method to control startup in a disk drive, the method comprising the steps of: determining a temperature of the coil of the VCM (col. 4, ll. 45); determining a time out period for the disk drive to power down if a spindle motor has not reached a desired operational velocity, where the time out period is increased with a decrease in the determined temperature (cols. 4/5, ll. 47-67/1-13); detecting whether the spindle motor reaches the operational velocity within the time out period (cols. 4/5, ll. 66-67/1-13); and providing a startup failure signal to enable power down of the spindle motor when the spindle motor does not reach the desired operational velocity within the time out period (col. 5, ll. 9-13; error indicated and signal sent from the controller to shut down the spindle motor).
- Schirle does not disclose measuring a resistance of a coil of a voice coil motor (VCM) and determining the temperature of the coil based on the measured resistance.
- Wallis discloses determining the temperature of a VCM based on the resistance of a coil of the VCM (col. 4, lines 47-63; Fig. 1, 'VCM Temperature' is sent to #4, which is in a processor. Furthermore, the resistance is measured by a measurement circuit/device, and the determined temperature of the VCM, which is derived from the resistance of a coil of the VCM, is sent to the processor (Fig. 1, 'VCM Temperature' is sent to #4, which is in a processor. Wallis measures the temperature of the VCM as described to increase the time taken to move the data head between given positions if the temperature of the VCM is above a predetermined value (abstract). This provides the advantage of reducing the heat built up in the mechanism moving the data without reducing the data access time (cols. ½, lines 63-68/1-5).

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- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that a measurement circuit used to measure the resistance of a coil of the VCM to determine the temperature of the VCM could replace the temperature sensor of Schirle, thereby increasing the time taken to move the data head (of Schirle) between given positions, and providing the advantage of reducing the built-up heat in the mechanism moving the data without reducing the data access time, as taught by Wallis.

Allowable Subject Matter

6. Claims 7-12 are allowed.
7. The following is an examiner's statement of reasons for allowance:
 - With respect to Claim 7, the Prior Art fails to disclose increasing the torque to the spindle motor corresponding with a decrease in the determined temperature, where the determined temperature is based on the measured resistance of a coil in a VCM.
8. Claims 14-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
 - With respect to Claim 14, the Prior Art discloses causing the current applied to a spindle motor to increase torque during startup; however, the Prior Art does not disclose setting current levels to increase the torque applied to the spindle motor at startup to correspond to the decrease in the determined temperature, where the temperature is determined using the resistance of the coil of the VCM.
 - With respect to Claim 15, the Prior Art discloses applying a sequence of voltages to coil windings of the spindle motor during startup to generate a torque to cause movement of

the spindle motor. However, the Prior Art does not disclose applying the sequence of voltages to generate an increased torque value to the spindle motor, and said increased value of torque corresponds with the decrease in the determined temperature, where the temperature is determined using the resistance of the coil of the VCM.

- With respect to Claim 16, the Prior Art discloses applying a sequence of commutation states to coil windings of the spindle motor during startup to generate a torque to cause movement of the spindle motor. However, the Prior Art does not disclose applying the sequence of commutation states to generate an increased torque value to the spindle motor, and said increased value of torque corresponds with the decrease in the determined temperature, where the temperature is determined using the resistance of the coil of the VCM.

9. Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable once the minor informalities are corrected, and if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

- With respect to Claim 17, the Prior Art discloses controlling timing of signals applied to coil windings of the spindle motor to generate a torque to cause movement of the spindle motor. However, assuming “the sequence of commutation states” is meant to be “the timing controlled signals,” the Prior Art does not disclose controlling of timing signals to generate an increased torque value to the spindle motor, and said increased value of torque corresponds with the decrease in the determined temperature, where the temperature is determined using the resistance of the coil of the VCM.

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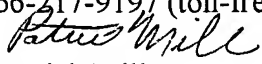
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 571-272-2070. The examiner can normally be reached on M-F, 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2800 ext 41. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Patrick Miller
Examiner
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pm
February 5, 2005


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